Procedure for L1Cal TT Monitoring GUI

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This is the original note by Darien , updated by Joe Haley:

Note: The control room should always have one instance of this GUI running on the node d0ol107 by the user d0cal in the d0cal home directory (just open a fresh xterm). This instance of the GUI should always have "Recording" ON and "Email Reports" ON.

To run this script from an online node (d0ol107 preferred), type:

```
setup l1cal2b_monitor
L1CalIIB_TTMon &
```

Or, use the L1Cal launcher, which is started with:

```
setup l1cal2b_monitor
L1CalIIB_launcher &
```

After a moment, you should see a gui displaying one quarter of all of the trigger towers of the calorimeter. The tabs at the top allow you to see any of the four quarters. The units are ADC counts, where the scale is 0.25 GeV of ET per count, with a pedestal of 8 counts for all channels (except for the Inter-Cryostat Region channels which have a pedestal of 0 counts).

The information display is captured from the ADF system by the TCC (trigger control computer) about every five seconds. The gui receives one full turn of data each time it is updated. You can use the vertical tick bar at the right to select which of the 36 active crossings you wish to look at. The purple column shows you the value (in case you want to look at the crossing with the highest energy deposit). Keep in mind that generally the turn will contain only one crossing which triggered.

There are three "status lights" at below the "take mean" button. These give the status of the event as defined by the TCC:

1. Op (green)/nOp(red)
   If this light is red, the TCC does not consider the L1cal system to be in operational mode, and there is no real hardware information diplayed (usually all zeros). After an initialization of the system, the TCC should declare it to be in operational mode, and this light should go green.
2. Cur(green)/Old(red)
   If this light is red, no new data was collected from the hardware on the last query. Note that this is independent of the gui's ability to freeze the data.
3. Trg(green)/Rnd(yellow)
   In ordinary operations, the TCC should capture a real triggered crossing (and the rest of the turn that goes with it). It should be the first crossing after the TFW sends a "Collect_status" qualifier bit. If this has occured, this status light should be green, and the crossing number of the triggered crossing will appear above in black. If no triggered data is available, the TCC captures a random turn of data, and assigns a random crossing as the triggered crossing. In this case, the status light will be yellow, and the triggered crossing will appear in yellow (if it happends to be one of the 36 live crossings).

There is a "TAKE MEAN" button, which serves as an option menu allowing options for viewing the data. "Take Mean" gives the option of looking at average values of the for the 36 crossings rather than looking at individual crossings. To get a running average, selecting "Run Mean x10" will give the mean of the averages of 50 turns of data. This value is multiplied by 10 for a more percise reading. The "Std Dev x100" option gives the standard deviation of the 36 crossings in one turn of data. The values displayed are multiplied by 100 for more percision.

The gui has the option to view either transverse energy or energy. This is controlled by a radiobuttion on the bottom. To view transverse energy, select the 'ET' option and to view energy select the 'E' option. For most purposes, one would most likely want to view energy, with the exception of the RMS option.

There is also a data logging function. When "Recording" is selected

(box is red), the GUI creates a text document and records hot towers. When not selected (box is gray), no data is recorded. It records for which ever function is being used. Regardless of whether E or ET is being displayed, it will log ET. The title of the text document will be Logfile_TTMon.<current day of week> and the name of the log file is automatically updated to the new day at midnight. At that time, any old log files for that new day will be overwritten.

There is also an option to send an email report of the log file for that day to the experts. If "Email Reports" button is turn on (box is red), then at midnight when the log file name is updated it will also search the previous day's log file for the five hottest EM and HAD towers and send an email to the list of email addresses giving in the L1Cal_TTMon_logfile module. Note, that "Email Reports" can only be on if "Recording" is also on.

In "fresh data" mode, the gui will update with a new turn of data every 5 seconds or so. You can freeze on the current turn by pushing "Freeze GUI data". You can get a new (single) turn by pushing "Get new stale data", and you can return to automatic refreshing mode by pushing "Get new fresh data." The status bar at the bottom should indicate when the gui last got new data.

The gui has no control functions. The TCC serves data continuously, whether or not any instances of the gui are running. It should be possible to run multiple instances.